DOCUMENT RESUME

ED 217 649 EC 142 734

AUTHOR Lee, Patricia; Alley, Gordon R.
TITLE Training Junior High School LD Students to Use a Test-Taking Strategy.
INSTITUTION Kansas Univ., Lawrence, Inst. for Research in Learning Disabilities.
SPONS AGENCY Bureau of Education for the Handicapped (DHEW/OE), Washington, D.C.
REPORT NO IRLD-RR-38
PUB DATE Jun 81
CONTRACT 300-77-0494
NOTE 23p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adolescents; Junior High Schools; *Learning Disabilities; *Scores; *Test Wiseness

ABSTRACT

The study involving 40 learning disabled (LD) Ss, investigated whether or not regular classroom test scores of LD junior high school students may be improved by training those students to use a test taking strategy. Results showed significantly higher posttest scores for the experimental than the control Ss. Test taking skills were found to generalize across settings and subject matter. Graphs with statistical data are included. (Author/SB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED217649

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

INSTITUTE FOR RESEARCH IN LEARNING DISABILITIES
The University of Kansas
Lawrence, Kansas, 66045
Emphasis on Adolescents and Young Adults

TRAINING JUNIOR HIGH SCHOOL LD STUDENTS TO USE A TEST-TAKING STRATEGY

Patricia Lee and Gordon R. Alley

JUNE 1981

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Patricia Lee
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

EC142134

Research Report No. 38

The cooperation of Lawrence USD #497, specifically South Junior High School, is gratefully acknowledged.

The University of Kansas Institute for Research in Learning Disabilities is supported by a contract (#300-77-0494) with the Bureau of Education for the Handicapped, Department of Health, Education, and Welfare, U. S. Office of Education, through Title VI-G of Public Law 91-230. The University of Kansas Institute, a joint research effort involving the Department of Special Education and the Bureau of Child Research, has specified the learning disabled adolescent and young adult as the target population. The major responsibility of the Institute is to develop effective means of identifying learning disabled populations at the secondary level and to construct interventions that will have an effect upon school performance and life adjustment. Many areas of research have been designed to study the problems of LD adolescents and young adults in both school and non-school settings (e.g., employment, juvenile justice, military, etc.)

Director: Donald D. Deshler

Research Coordinator: Jean B. Schumaker

Institute for Research in Learning Disabilities
The University of Kansas
313 Carruth-O'Leary Hall
Lawrence, Kansas 66045

The preparation of this document was supported by a government contract. The views expressed here are those of the Institute, and do not necessarily reflect official positions of the Bureau of Education for the Handicapped, DHEW, USOE.

COOPERATING AGENCIES

Were it not for the cooperation of many agencies in the public and private sector, the research efforts of The University of Kansas Institute for Research in Learning Disabilities could not be conducted. The Institute has maintained an on-going dialogue with participating school districts and agencies to give focus to the research questions and issues that we address as an Institute. We see this dialogue as a means of reducing the gap between research and practice. This communication also allows us to design procedures that: (a) protect the LD adolescent or young adult, (b) disrupt the on-going program as little as possible, and (c) provide appropriate research data.

The majority of our research to this time has been conducted in public school settings in both Kansas and Missouri. School districts in Kansas which have or currently are participating in various studies include: Unified School District USD 384, Blue Valley; USD 500, Kansas City, Kansas; USD 469, Lansing; USD 497, Lawrence; USD 453, Leavenworth; USD 233, Olathe; USD 305, Salina; USD 450, Shawnee Heights; USD 512, Shawnee Mission; USD 464, Tonganoxie; USD 202, Turner; and USD 501, Topeka. Studies are also being conducted in several school districts in Missouri, including Center School District, Kansas City, Missouri; the New School for Human Education, Kansas City, Missouri; the Kansas City, Missouri School District; the Raytown, Missouri School District; and the School District of St. Joseph, St. Joseph, Missouri. Other participating districts include: Delta County, Colorado School District; Montrose County, Colorado School District; Elkhart Community Schools, Elkhart, Indiana; and Beaverton School District, Beaverton, Oregon. Many Child Service Demonstration Centers throughout the country have also contributed to our efforts.

Agencies currently participating in research in the juvenile justice system are the Overland Park, Kansas Youth Diversion Project, and the Douglas, Johnson, Leavenworth, and Sedgwick County, Kansas Juvenile Courts. Other agencies which have participated in out-of-school studies are: Penn House and Achievement Place of Lawrence, Kansas; Kansas State Industrial Reformatory, Hutchinson, Kansas; the U. S. Military; and Job Corps. Numerous employers in the public and private sector have also aided us with studies in employment.

While the agencies mentioned above allowed us to contact individuals and support our efforts, the cooperation of those individuals--LD adolescents and young adults; parents; professionals in education, the criminal justice system, the business community, and the military--have provided the valuable data for our research. This information will assist us in our research endeavors that have the potential of yielding greatest payoff for interventions with the LD adolescent and young adult.

Abstract

Among the various problem-solving activities, poor test-taking strategies are frequent deficits of learning disabled (LD) students. It is becoming increasing clear that students can improve their test performance by applying a strategy. Furthermore, strategy training is especially appropriate for mildly handicapped learners who have not acquired such skills incidentally or experientially. This study was undertaken to investigate whether or not regular classroom test scores of LD junior-high school students may be improved by training those students to use a test-taking strategy. Results showed significantly higher posttest scores for the experimental than the control subjects. Test-taking skills were found to generalize across settings and subject matter.

In many cases a student's failure on a certain academic task may be due to inefficient or inadequate problem-solving skills rather than a deficit in the particular subject or activity. Thus, the performance may be a response to the task itself, not the subject matter. To ensure that instructional programs appropriately address and remediate the underlying cause(s) of poor student performance, factors such as thinking, problem solving and/or organization must be considered in addition to exposure to subject matter. While average students may not need direct instruction in such skills and strategies, learning disabled (LD) students, for example, may need such training. The idea of teaching problem-solving strategies, while not a new concept, has been the focus of several recent studies of normal learners (Brown, 1978; Flavell, 1977; Whimbey, 1977) as well as learning disabled adolescents (Alley & Deshler, 1979; Deshler, Lowrey, & Alley, 1979; Kaufman & Kaufman, 1979; Torgeson, Murphy, & Ivey, 1979).

Among the various problem-solving activities, poor test-taking strategies have been identified as one of the four disabilities most frequently found to describe the learning disabled student (Alley, Deshler, & Warner, 1979). This finding is not surprising in view of the characteristics commonly applied to learning disabled students, i.e., impulsiveness (Hallahan, Kauffman, & Ball, 1973; Keogh, 1971), lack of persistence in searching for information (Havertape, 1976), and trial-and-error problem-solving (Havertape, 1976; Klausmeier & Loughlin, 1967). Finally, Havertape found that learning disabled students: (a) paid attention to the wrong part of directions, (b) often were misled by irrelevant information, and (c) exhibited random responses to problem-solving situations.

Based on the demonstrated need for improvement in the test-taking skills of learning disabled students, the present study was designed to determine the possibility of training junior-high learning disabled students to apply a test-taking strategy learned in the resource room to improve their performance on regular classroom tests.

Review of the Literature

Test-taking Skills

In a study of testing and grading practices, Cuthbertson (1979) found that junior- and senior-high teachers usually give tests after each unit of instruction with test scores amounting to approximately 60% of a student's total grade for the course. In spite of the value assigned to test performance, Cuthbertson found that students receive no consistent amount or type of direct instruction in test-taking strategies. Yet, empirical evidence has demonstrated that test-wise individuals tend to perform better on tests than their untrained peers (Diamond & Evans, 1972; Ford, 1973; Millman, 1966; Nilsson & Wedman, 1974; Oakland, 1972; Rowley, 1974; Thorndike, 1951).

Compared to normal learners, secondary LD students appear to be at a great disadvantage in testing situations as a result of some of their major characteristics. In a comparison of the problem-solving skills of LD and non-LD students, Havertape (1976) found LD students to exhibit perseveration, disinhibition, and qualitatively different approaches to problem solving. Keogh (1971) and Hallahan, Kauffman, and Ball (1973) found that LD students tend to choose the first item on a test which resembles the correct answer without examining other alternatives. In view of the constraints of time and format (most frequently, multiple choice) associated with most test situations, it appears that most LD

students are ill-equipped for the actual test-taking process. Thus, direct, active test-taking instruction for such students is warranted.

Content and Instructional Method of Test-Taking Strategy

Congruent with a shift in society's expectations of students from one of memorization of information to that of learning rules and concepts which may be used to generate information and answers to problems (Meacham, 1972), strategy training must be: (a) applicable across settings, (b) seen as a reasonable activity that works, (c) related to a counterpart in real-life experiences, and (d) a process that lends itself to effective training techniques (Brown & Campione, 1977).

In planning a teaching strategy, sequencing of instruction is important. The following five steps have been outlined by Alley and Deshler (1979) as the basic components of a learning strategies program for LD adolescents.

1. Make the student aware of his/her current learning habit.
2. Explain alternative strategy.
3. Learn strategy.
4. Apply the strategy to controlled materials.
5. Apply strategy to classroom materials.

Clearly, this sequence allows for the much needed generalization of skills (Baer, 1979; Kuhn, 1974; Stokes & Baer, 1977) as the student at the last stage would be performing the new strategy in the regular classroom across various instructional materials.

Based on various research findings (Bornstein & Quevillon, 1976; Dansereau, Collins, McDonald, Holley, Garland, Diekhoff, & Evans, 1979; Meichenbaum, 1975; Whimbey, 1977), the self-instructional model was considered best suited for strategy training as it gives participants a feeling of control and enables them to practice self-statements independently.

Method and Procedures

Subjects

Participants in this study were selected from a target population of LD junior-high students in a midwest university community. District criteria for LD placement were in compliance with state and federal regulations.

The 40 subjects (grades 7-9; age range 13.6-15.5) were matched for grade level and English or Social Studies teacher, then randomly assigned to experimental or control conditions.

Methodology

Pretest

All subjects were administered a unit test, taken from their regular English or Social Studies textbook, over material covered by the regular classroom teacher within a month prior to administration. The investigator administered the test in the LD resource room and asked students to do their best.

Intervention

The intervention program (20 sessions, 30 minutes per day) was delivered to the experimental subjects in groups of three to five. The sessions were conducted by the experimenter and took place in a partitioned section of the LD resource room. Control subjects attended classes as regularly scheduled.

The test-taking strategy, SCORER (Carman & Adams, 1972), was presented verbally to the experimental subjects in the order of occurrence:

1. S = Schedule your time.

2. C = Clue words.

3. O = Omit difficult questions.

4. R = Read carefully.

5. E = Estimate your answers.

6. R = Review your work.

As each component was covered, students received a presentation sheet and a practice worksheet. After reading aloud from the presentation sheet the name of the component and its meaning, students were asked to discuss personal experiences related to the particular test-taking component. Students were then asked to complete a practice worksheet after the experimenter had first demonstrated two problems for them. Finally, the session ended with a five- to seven-minute review. All six SCORER components were delivered according to this presentation-practice-review model.

As students demonstrated acquisition (i.e., reciting and/or writing the meanings of all components with 100% accuracy for three successive days) of all six components, the focus of the intervention sessions shifted to mastery. Mastery was defined as application of SCORER components to sample tests with 90% accuracy on controlled test materials and 80% accuracy on regular classroom test materials.

Posttest

After the experimental group had completed the mastery sessions, scores from their next unit test in English or Social Studies were collected along with scores on the same test for their matched controls.

Hypotheses

The following criterion hypotheses were investigated in this study:

1. Minimal competency hypothesis. All experimental subjects will name and define the SCORER components in order with 100% accuracy three days in succession.

2. Mastery competency hypothesis/controlled test materials. All experimental subjects will apply SCORER components to three controlled sample tests with 90% accuracy.

3. Mastery competency hypothesis/regular classroom test materials. All experimental subjects will apply SCORER components to two regular classroom sample tests with 80% accuracy. In addition to the criterion hypotheses, the study investigated the following null hypothesis statistically.

Null hypothesis. There will be no significant difference between the adjusted posttest means for the SCORER-trained subjects and the control subjects.

A criterion reference design was used to investigate the criterion hypotheses (Krathwohl & Payne, 1971). Daily recording of experimental subjects' percentage correct scores on acquisition probes and mastery checks was performed by the investigator.

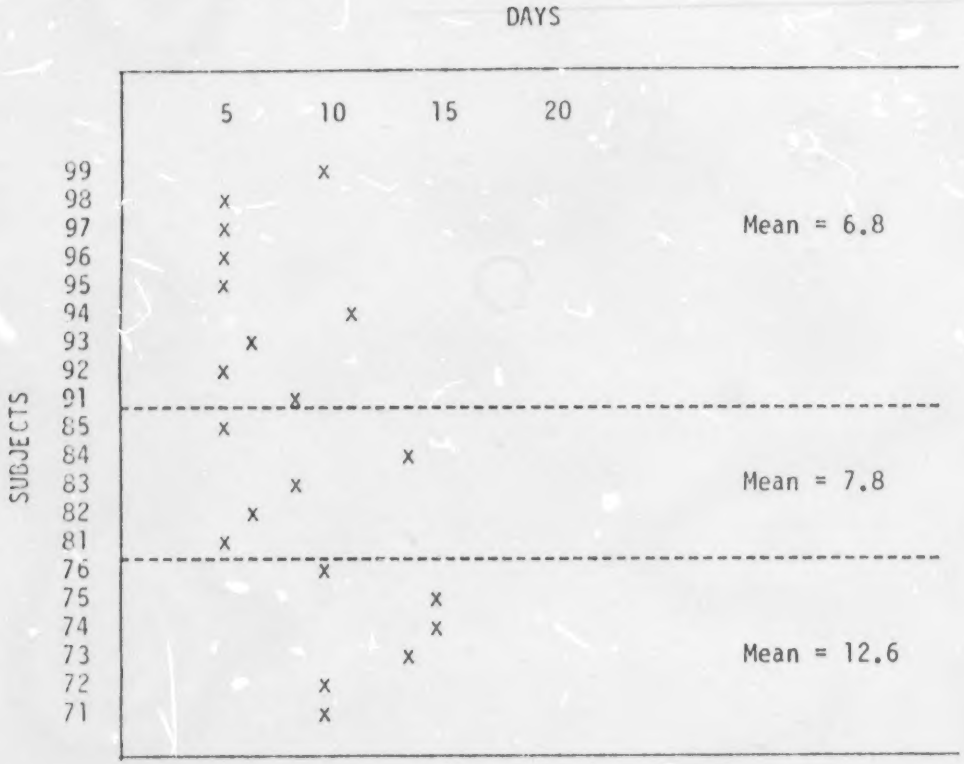
The design for investigating the regular classroom test scores of experimental and control subjects was a two x two factorial, pretest-posttest control group design (Campbell & Stanley, 1966). A Pearson product-moment correlation coefficient was computed to determine whether the pre- and posttest measures were concomitant in order to meet the assumptions of ANCOVA. The value obtained was .62 suggesting the two measures are concomitant. This design yielded adjusted posttest scores which were analyzed for equal means between the groups by an F ratio at the .05 level of significance (Ferguson, 1976).

Results

The present study was undertaken to investigate whether regular classroom test scores could be improved in a group of learning disabled junior high students by training those students to use a test-taking strategy. Also of interest were these questions: (a) How many days of instruction are required for students to acquire the strategy?, (b) How many days of instruction are required for students to demonstrate mastery of the strategy in controlled and regular classroom materials?, and (c) What are the differences among seventh, eighth, and ninth graders in the rate of acquisition and mastery of the strategy?

As illustrated in Figure 1, all experimental subjects reached acquisition with an overall mean of 8.8 days required to acquire the strategy.

In terms of mastery (see Figure 2), all but one student reached mastery in controlled materials (overall mean of 13.8 days), while 13 of the 20 subjects (see Figure 3) reached mastery in regular classroom materials (overall mean of 17.3 days). As seen from Figures 1-3, of the seven subjects not reaching
mastery in regular classroom materials, two were from ninth, one from eighth, and four were from seventh grade. The difference noted between performances of seventh graders and those of eighth and ninth graders may also be seen in the mean number of days required by subjects at each grade level to reach acquisition/mastery. Whether it can be concluded that benefit from strategy instruction is a developmental phenomenon is still in question due to insufficient evidence. Among the three criterion reference hypotheses of this study, one was not rejected (#1), while the other two were rejected (#2, 3). That is, all students met acquisition



---------Separates Grade Levels
7_ Seventh Grade
8_ Eighth Grade
9_ Ninth Grade

Figure 1. Acquisition of SCORER

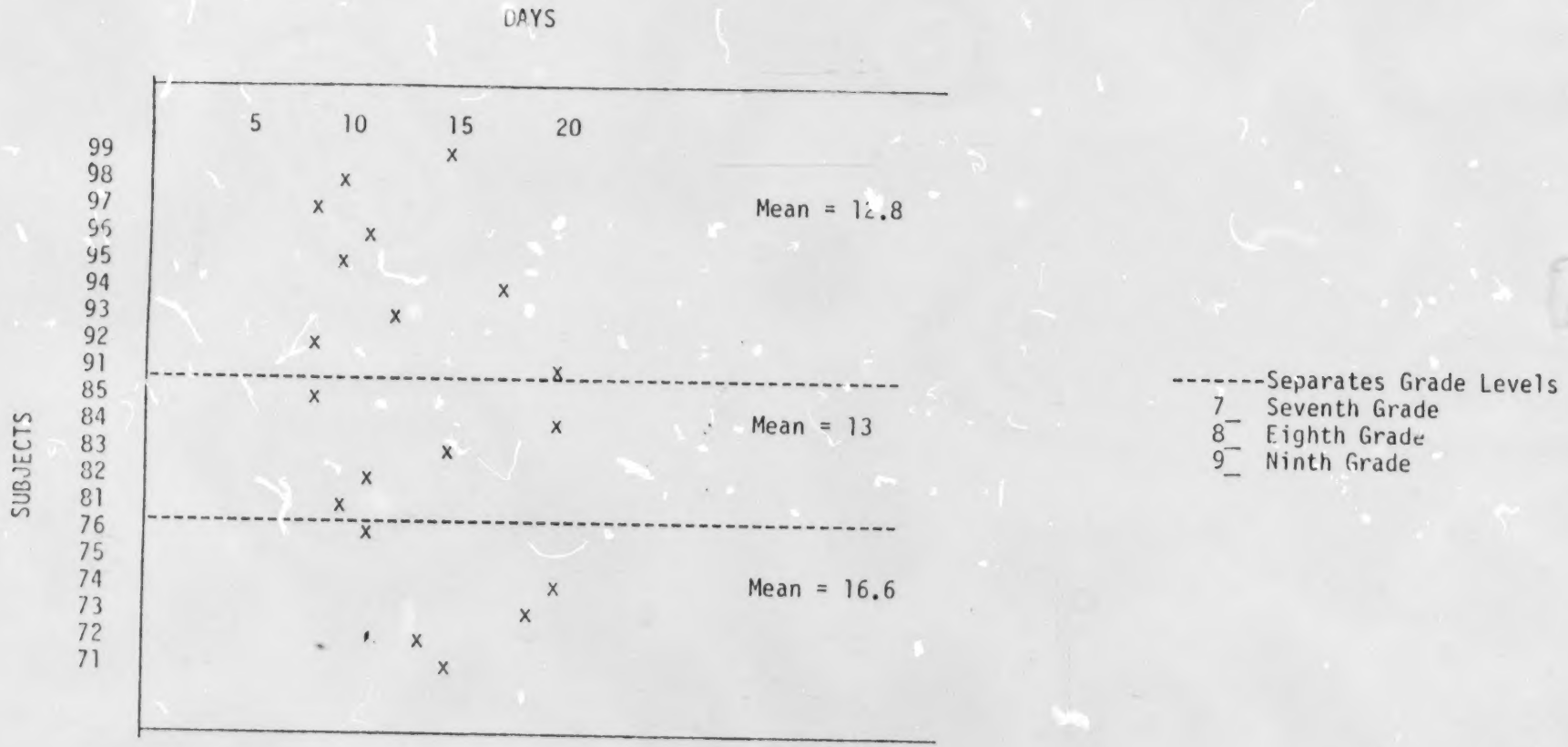


Figure 2. Mastery of SCORER in Controlled Materials

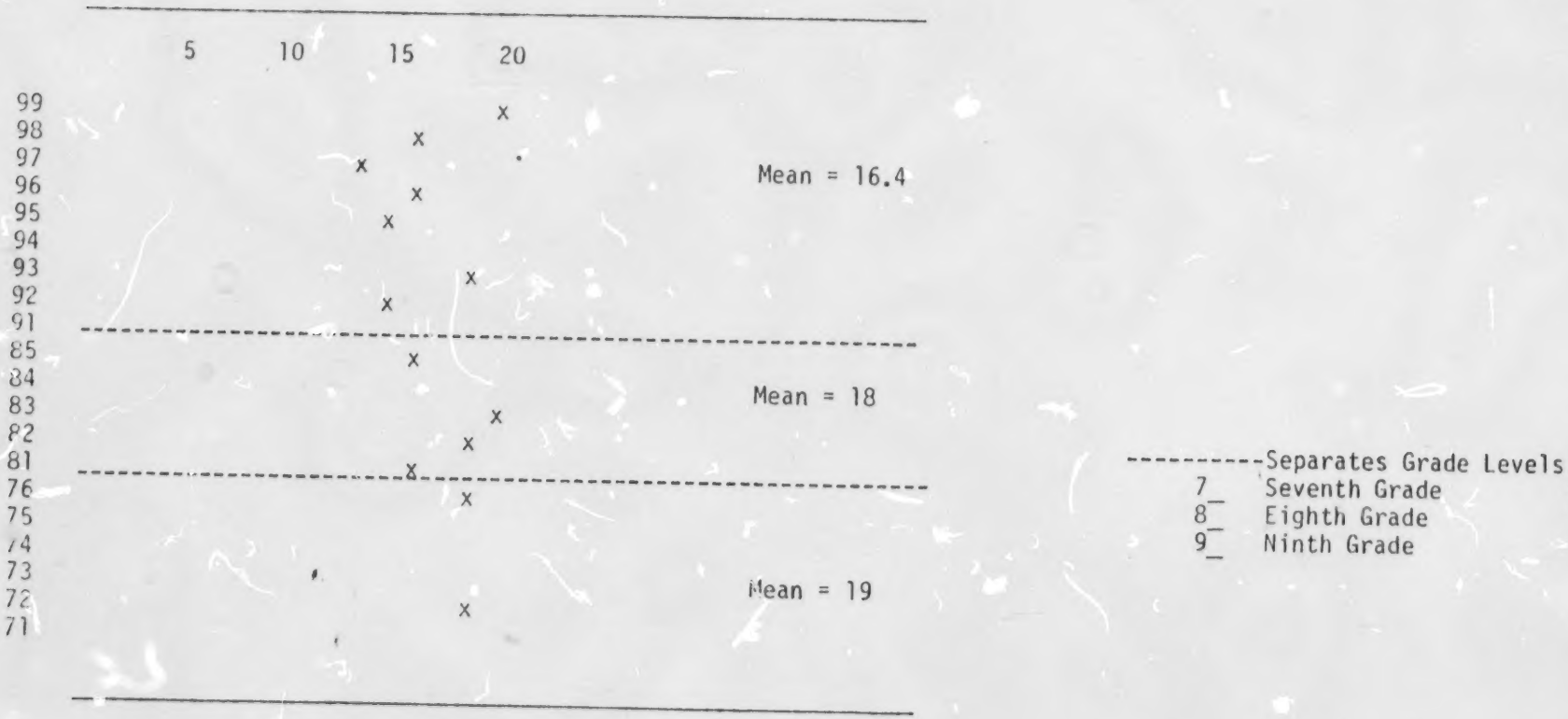


Figure 3. Mastery of SCORER in Regular Classroom Materials

criteria, 95% met mastery in controlled materials, and 65% reached mastery in regular classroom materials.

Statistical Interpretation of the Unit Test/Regular Classroom Test Data

The design used to study the Unit Test/Regular Classroom Test performance was a two x two factorial design. The regualr classroom posttest was analyzed using the Unit Test pretest as a covariate. One hypothesis was tested using an F test within the context of analysis of covariance. Table 1 presents the means of the pretests, posttests and adjusted posttests. Table 2 summarizes the results of the F test. The regression of the dependent measures (posttests) onto their respective pretests was significant, $F(1, 37) = 21.37$, $p \leq .001$. This indicates that the pre- and posttest measures were concomitant.

Null Hypothesis

There will be no significant difference between the adjusted posttest means for the SCORER-trained subjects and the control subjects. This hypothesis was rejected, $F(1, 37) = 6.57$, $p \leq .01$ (see Table 2). There is a significant difference between the two groups with the difference favoring the experimental group.

Discussion

In addition to the research questions discussed above, the question of generalization of test-taking skills was considered of great importance in this study. The finding that the performance of experimental subjects on regular classroom tests was significantly better than that of the control group is evidence that the test-taking strategies did indeed generalize. Also, this finding strongly supports the notion that "test-wiseness" is a possible source of variance in test scores as indicated in previous research (Diamond & Evans, 1972; Ford, 1973; Millman, 1966; Nilsson & Wedman, 1974; Oakland, 1972; Rowley, 1974; Thorndike, 1951).

Table 1

Means, Adjusted Means and Standard Deviations for
Unit Tests - Regular Classroom Tests

	PRETEST		POSTTEST		ADJUSTED POSTTEST
GROUP	M	SD	M	SD	M
Exp	55.70	14.97	70.65	15.81	69.15
Control	50.90	21.96	55.00	22.04	56.50

Table 2

Summary Table of Analysis of Covariance for
Unit Test - Regular Classroom Test Performances

Source	SS	df	MS	F
Group	1573.76	1	1573.76	6.57*
Pretest (covariate)	5118.56	1	5118.56	21.37**
Error	8861.99	37	239.51	

*$p < .01$
**$p < .001$

A further illustration of the positive effects of the test-taking intervention comes from the LD resource teachers of the experimental subjects. These teachers reported that the students trained in SCORER participated more actively in discussions, demonstrated knowledge about study skills and test taking, and demonstrated an understanding of the concept. In addition, the teachers requested that the training also be provided to control subjects.

Educational Implications

Test-taking will most likely continue to be the most frequently experienced problem-solving situation confronting the LD student during his/her school years. It is becoming increasingly clear that students can improve their performance on tests by using a strategy, and that strategy training is especially appropriate for mildly handicapped learners who have not acquired these skills incidentally nor experientially.

The appropriateness of strategy training for LD students is exemplified in that they respond favorably to: (a) self-management techniques, (b) a definite ordered structure to follow, (c) numerous examples and practice sessions, (d) close supervision during acquisition and mastery stages, and (e) demonstration of the utility of the strategy. Teachers who are adept in (a) diagnosing needs of the LD student, (b) performing task analysis of specific learning strategies, (c) providing numerous related samples and examples, and (d) relating the strategy use to real-life activities will most likely provide an appropriate context for strategy learning to occur. The trans-situational applicability inherent in learning strategies is one of its most important aspects as we strive to meet the ultimate goal of education--independent learners.

References

Alley, G. R., & Deshler, D. D. Teaching the learning disabled adolescent: Strategies and methods. Denver: Love Publishing Co., 1979.

Alley, G. R., Deshler, D. D., & Warner, M. M. Identification of LD adolescents: A Bayesian approach. Learning Disabilities Quarterly, 1979, 2, 76-83.

Baer, D. M. Generalization. Presentation at Human Development and Family Life Professional Seminar, February, 23, 1979, University of Kansas.

Bornstein, P. & Quevillon, R. P. The effects of a self-instructional package on overactive preschool boys. Journal of Applied Behavior Analysis, 1976, 9, (2), 179-188.

Brown, A. L. Knowing when, where, and how to remember: A problem of metacognition. In R. Glaser (Ed.), Advances in instructional psychology. Hillsdale, N. J.: Lawrence Erlbaum, 1978.

Brown, A. L., & Campione, J. C. Memory strategies in learning. Technical Report #22, ERIC, ED 136234, 1977.

Campbell, D. T., & Stanley, J. C. Experimental and quasi-experimental designs for research. Chicago: Rand McNally, 1966.

Carman, R. A., & Adams, W. R., Jr. Study skills: A student's guide for survival. New York: Wiley, 1972.

Cuthbertson, E. B. An analysis of secondary testing and grading procedures. Unpublished master's thesis, University of Kansas, 1979.

Dansereau, D. F., Collins, K. W., McDonald, B. A., Holley, C. D., Garland, J., Diekhoff, G., & Evans, S. H. Development and evaluation of a learning strategy training program. Journal of Educational Psychology, 1979, 71, 64-73.

Deshler, D. D., Lowrey, N., & Alley, G. R. Programming alternatives for learning disabled adolescents: A nationwide survey. Academic Therapy, 1979, 14, (4), 389-397.

Diamond, J. J. & Evans, W. J. An investigation of the cognitive correlates of test-wiseness. Journal of Educational Measurement, 1972, 9, 145-150.

Ferguson, G. A. Statistical analysis is psychology and education. New York: McGraw-Hill Book Co., 1976.

Flavell, J. Cognitive development. N. J.: Prentice-Hall, 1977.

Ford, V. A. Everything you wanted to know about test-wiseness. Princeton, N. J.: Educational Testing Service, 1973 (ERIC document 093912).

Hallahan, D. P., Kaufman, J. M., & Ball, D. W. Selective attention and cognitive tempo of low achieving and high achieving sixth grade males. Perceptual Motor Skills, 1973, 36, 579-583.

Havertape, J. F. The communication functions in learning disabled adolescents: A study of verbalized self-instructions. Unpublished doctoral dissertation, University of Arizona, 1976.

Kaufman, D., & Kaufman, P. Strategy training and remedial techniques. Journal of Learning Disabilities, 1979, 12 (6), 416-420.

Keogh, B. Hyperactivity and learning disorders: Review and speculation. Exceptional Children, 1971, 38, 101-110.

Klausmeier, H. S., & Loughlin, L. J. Behaviors during problem solving among children of low, average, and high intelligence. Journal of Educational Psychology, 1967, 52, 148-152.

Krathwohl, D. R., & Payne, D. A. Defining and assessing educational objectives. In R. L. Thorndike (Ed.), Educational measurement. Washington, D.C., American Council on Education, 1971.

Kuhn, D. Inducing development experimentally: Comments on a research paradigm. Developmental Psychology, 1974, 10, 590-600.

Meichenbaum, N. R. Self-instructional methods. In F. Kanfer & A. Goldstein (Eds.), Helping people change. N.Y.: Permagon, 1975.

Millman, J. Test-wiseness in taking objective achievement and aptitude examinations. Final Report, 1966, College Entrance Examination Board.

Nilsson, I., & Wedman, I. On test-wiseness and some related constructs. Educational Reports, UMEA, N. 7, 1974.

Oakland, T. Effects of test-wiseness materials. Journal of School Psychology, 1972, 10, 355-360.

Rowley, G. Which examinees are most favoured by the use of multiple-choice tests? Journal of Educational Measurement, 1974, 11, 15-23.

Stokes, T. F., & Baer, D. M. An implicit technology of generalization. Journal of Applied Behavioral Analysis, 1977, 10, 349-367.

Thorndike, E. L. Reliability. In E. F. Lindquist (Ed.), Educational Measurement. Washington, D. C.: American Council on Education, 1951.

Torgesen, J. K., Murphy, A., & Ivey, C. The influence of an orienting task on the memory performance of children with reading problems. Journal of Learning Disabilities, 1979, 12 (6), 396-401.

Whimbey, A. Teaching sequential thought: The cognitive skills approach. Phi Delta Kappan, 1977, 59, 255-259.

END

DEPT. OF HEW

NAT'L INSTITUTE OF EDUCATION

ERIC

DATE FILMED

OCT. 26 . 1982